BANGALORE ELECTRICITY SUPPLY COMPANY LIMITED

"Selection of Service Provider for Sale of Smart Meters to prospective consumers on rate contract basis in retail outlets for arranging power supply to new connections (including temporary installations) along with Supply, Implementation, Commissioning of IT system for a period of 5 years & Maintenance of IT system for a period of 10 years in BESCOM Jurisdiction." vide Tender Enquiry No. BESCOM/2024-25/SE0193

Annexure G
AMI SYSTEM AVAILABILITY

AMI system issues and availability are flagged at three different severity levels.

a) Severity 1 is the most critical being a complete system level failure or breach of IT policies and requiring urgent and immediate attention.

b) Coverage under severity 2 are outages that do not cause any immediate disruption but subsequently may result into severity 1 outage.

c) Severity 3 are those issues / problems / outages which are neither of an emergency nor priority level as grouped under severity level 1 or 2.

The AMISP shall implement an appropriate online SLA Application (as elaborated in Clause 7.7 of this Section) for problem/defect reporting and tracking system. This would enable logging and tracking of outages / defects/non-conformances of all severity levels and get the approval of the same from the Utility towards desired resolution. The incidents (15 in number) are categorized as mentioned in below table.

Category	**Incident Description**[1]
Severity 1 – Urgent	a) Complete loss of AMI system functions[2] b) Partial outage of AMI functions i. Utility user interface ii. Consumer portal c) Stoppage of data backup at DC/DR (refer Clause '7.3.1 e' of this Section) d) Cyber Security issues leading to unauthorized access to systems/applications
Severity 2 – Serious	a) Outage at Network Operation cum Monitoring Centre i. Complete outage of communication connectivity ii. Failure of UPS system iii. Failure of Battery / other auxiliary system) b) Interruption of data exchange with utility enterprise systems c) Partial outage of AMI functions i. Outage of VEE ii. Billing Determinants iii. Reports d) Breach of data privacy e) Adherence to RPO / RTO[3] as per Clause 2.7.3.3.9 of this Section and as mentioned in Clause 7.3.1 of this Section

[1] Please note that the table provides the different incidents categorized under different severity levels. If any incident at a higher severity level or order is active, then it shall be understood that a new incident at a lower severity level or order linked to the one at the higher-level incident, shall not be separately registered. For instance, when there is an incident "Complete Outage of AMI system functions" under Severity-1, then "Partial outage of AMI functions" or "Interruption of data exchange with utility enterprise systems" shall not be registered.
[2] A complete outage of AMI functions may happen due to a system level crash or outage of DC/DR infra or outage of MPLS bandwidth at DC/DR
[3] RTO and RPO are expected to be checked once a month for purpose of SLA

Category	Incident Description[1]
Severity 3 – Minor	a) Non-availability of reports as per Clause 6.2 of this Section during the Operation Phase b) Resolution of complaint ticket raised and passed on by CCS [These complaints shall be registered within the SLA Application and hence shall have to undergo mutual agreement checks between Utility/AMISP before being registered for resolution] c) Non-availability of required inventory of spares specified in Clause 7.3.3 of this Section d) Failure of workstation, printers, LAN etc. at the NOMC e) Non-availability of designated AMISP's Manpower at the NOMC

Response & Resolution Time

The target times within which the AMISP should respond to support requests for each category of severity is described in the following table.

a) The Initial Response Time is defined as the period from the initial logging of the support request (through established systems and/or communications channels) and the acknowledgment of the AMISP subject to the maximum time defined in the following table. In case, AMISP doesn't respond within initial response time, the support shall be deemed acknowledged by the AMISP.

b) The Action Resolution Time is the period from the acknowledgement of support request to the AMISP delivering a solution subject to the Maximum time defined in following table.

c) The Action Resolution Time includes investigation time and consideration of alternative courses of action to remedy the situation.

Severity	Initial Response Time	Maximum Action Resolution Time	Action
1	[15 minutes]	[2 hours]	An urgent or emergency situation requiring continuous attention from necessary support staff until system operation is restored.
2	30 minutes]	[24 Hours]	Attempt to find a solution acceptable to the utility (dependent on reproducibility), as quickly as practical.
3	[2 hours]	[10 days]	Evaluation and action plan. Resolution time is dependent on reproducibility, ability to gather data, and the Utility's prioritization.

Service Response Requirements

Emergency Support for Severity 1 issues are to be provided 24 hours a day, seven days a week. The on-call support team shall include all key technical competencies so that any aspect of a system failure can be attended to. Severity 1 issues shall be reported by telephone for rapid response; the key objective is to restore the system to an operational state as quickly as possible.

System Availability Calculations

System level issues / availability calculation methodology shall be as below:

a) For Severity-1 and 2 level incidents, the non-availability hours for availability calculation shall be counted from the end of the allowed Action Resolution time for their first instance in a given month. If any incident, repeats in the same month, the non-availability hours for availability calculation shall be counted from the end of allowed Initial Response Time.

b) For Severity-3 events, the non-availability hours for availability calculation shall be counted from the end of the allowed Action Resolution time

A standardized online ticket register shall be maintained, that shall be made available to utility online, containing the following:

Details of each issue reported:

a) Actions taken by AMISP to correct the issue

b) Applicable Severity level

c) Time of reporting to the AMISP support engineer/support

d) Actual vs Allowed response & resolution time as defined in this annexure

e) Review of utility's Engineer-in-charge as well as the AMISP's support engineer of the site.

In the event of multiple failures at a site, due to a common cause, the first FPR (Field Problem, Report) logged shall be used for the purpose of system availability calculation. However, simultaneous multiple outages due to unrelated cause would be counted separately.

Availability computation shall be done on monthly basis in selected area(s) of operation. The formula to be used for availability computation shall be as under:

$$\text{Availability per month} = \frac{\text{THM} - (\text{S1 X 1} + \text{S2 X 0.8} + \text{S3 X 0.5})}{\text{THM}}$$

- Where THM is total hours in the month when power supply to AMI system is available
- S1/ S2/ S3 is the total non-available hours in Severity Level-1 /2/3

S1/ S2/ S3 are computed for each event. For instance, S3 for each Severity-3 event would be number of hours passed beyond the maximum resolution time

for which the event is not resolved. Some examples for the same are provided below

Category	Example of computing non-available hours
Severity 1 – Urgent	For incidents happening for the first time in the month, Number of hours beyond the allowed maximum resolution time for which: a) Complete loss of AMI system functions b) Partial outage of AMI functions i. Utility user interface ii. Consumer portal c) Cyber security issues remain unresolved d) Data backup at DC/DR remains stopped For incidents happening for the second or more times in the month, Number of hours beyond the allowed initial response time for which: a) Complete loss of AMI system functions b) Partial outage of AMI functions i. Utility user interface ii. Consumer portal c) Cyber security issues remain unresolved d) Data backup at DC/DR remains stopped
Severity 2 – Serious	For incidents happening for the first time in the month, Number of hours beyond the allowed maximum resolution time for which: a) Outage at Network Operation cum Monitoring Centre i. Complete outage of communication connectivity ii. Failure of UPS system iii. Failure of Battery / other auxiliary system) b) Partial outage of AMI functions i. Outage of VEE ii. Billing Determinants iii. Reports etc. c) Any single event on data privacy breach is not resolved d) Interruption of data exchange with utility enterprise systems remains unresolved e) Adherence to RPO / RTO is not ensured For incidents happening for the second or more times in the month, Number of working hours beyond the allowed initial response time for which a) Outage at Network Operation cum Monitoring Centre i. Complete outage of communication connectivity ii. Failure of UPS system iii. Failure of Battery / other auxiliary system) b) Partial outage of AMI functions i. Outage of VEE

Category	Example of computing non-available hours
	ii. Billing Determinants iii. Reports etc. c) Any single event on data privacy breach is not resolved d) Interruption of data exchange with utility enterprise systems remains unresolved e) Adherence to RPO / RTO is not ensured
Severity 3 – Minor	Number of days beyond 10 days for which (Number of days shall be converted to number of hours by multiplying it with 24) a) Non-availability of reports as per Clause 6.2 of this Section during the Operation Phase b) Resolution of complaint ticket raised and passed on by CCS [These complaints shall be registered within the SLA Application and hence shall have to undergo mutual agreement checks between Utility/AMISP before being registered for resolution] c) Non-availability of required inventory of spares specified in Clause 7.3.3 of this Section d) Failure of workstation, printers, LAN etc. at the NOMC e) Non-availability of designated AMISP's Manpower at the NOMC

Sd/-
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DAS, SG & TIC
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